Electricity on the Farm

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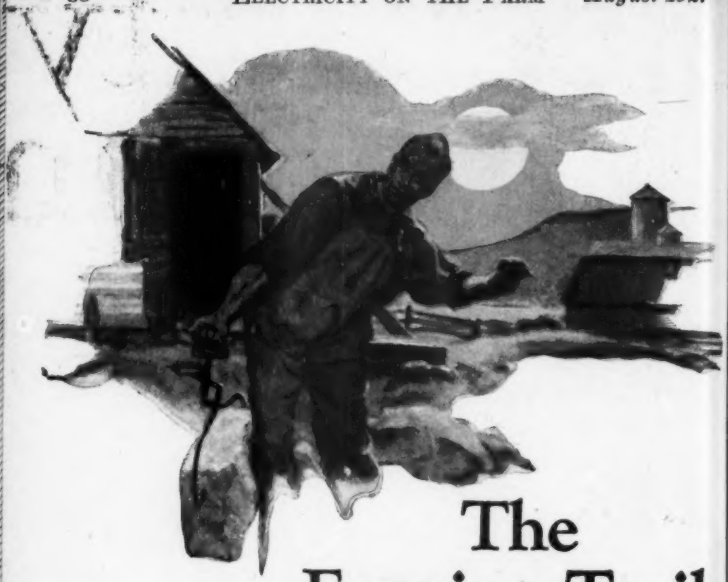
THE ELECTRIC REFRIGERATOR SUPPLANTS THE ICE HOUSE

See page 44



The Evening Trail

TRIPS to the ice house, early and late—the better the hay weather, the more ice you lug—until electricity comes your way. Then, for a few dollars a month, electricity keeps things cold. No more ice cutting or sawdust hauling—no more lugging.

The first cost is usually less than that of a good ice house. The running cost is usually less than the cost of ice.

The trail to the ice house disappears along with the path to the pump and a score of tasks are done for both men and women when electric power comes to the farm.

If you are on an electric line or hope to be soon, ask your electric power company for a copy of the G-E Farm Book which explains many uses for electricity on the farm.

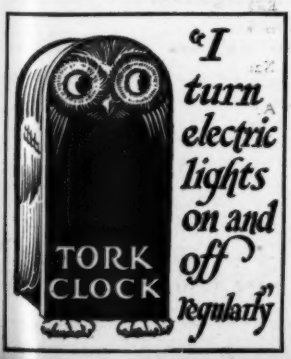
The General Electric Company has contributed to electric refrigeration by practical efforts for nearly twenty years. Let this monogram be your guide when buying anything electric, whether it be MAZDA lamps, wiring devices, household equipment, refrigerators, or the motors that do the heavy chores at the barn.

GENERAL ELECTRIC

More exercise for Mrs. Hen!

A little gentle coaxing with artificial light at the right time, makes all the difference in the world in winter egg production. The important thing is to use the light *regularly.*

A Tork Clock is the simplest and the most economical device obtainable to regulate the daily use of electric light. The Tork Clock system provides automatic *bright* and *dim* lighting, on any schedule desired.



Tork Clocks are standard for any voltage so that they may be used on a 32-volt farm plant, or on 110 volt systems. They may be secured through any electrical dealer or contractor. Their installation is simple and their performance is regular.

We shall be glad to send to any poultryman complete information, including a detailed description and wiring diagrams of the Tork Clock bright and dim system, mentioned above.

TORK COMPANY

12 EAST 41st STREET • NEW YORK

Can We Help You?

What Do You Want?

This is *your* page! If you want complete information on electric appliances and equipment of any kind, just jot down on the coupon below the numbers opposite whatever you're interested in, mail it to us, and without cost or obligation to you we shall be glad to have reliable manufacturers send you the information you desire. *Help yourself!*

Farm Equipment

1 Bone Grinders, Electric.
2 Branding Irons, Electric.
3 Butter Workers, Electric.
4 Choppers and Grinders, Meat, Electric.
5 Churns, Electric.
6 Clipping Machines, Electric.
7 Cream Separators, Electric.
8 Dairy Coolers, Electric.
9 Ensilage Cutters, Electric.
10 Feed Cutters, Electric.
11 Grain Graders and Cleaners, Electric.
12 Groomers, Electric.
13 Hovers and Brooders, Electric.
14 Incubators, Electric.
15 Milking Machines, Electric.
16 Milk Pasteurizers, Electric.
17 Milk Testers, Electric.
18 Motors, Electric.
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28 Complete Plants, Electric Operated.
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37 Freezers, Electric.
38 Heating Pads, Electric.
39 Irons, Electric.
40 Ironing Machines, Electric.
41 Ranges, Kitchen, Electric.
42 Refrigerators, Electric.
43 Sewing Machines, Electric.
44 Toasters, Table, Electric.
45 Vacuum Cleaners, Electric.
46 Vibrators, Massaging, Electric.
47 Waffle Irons, Table, Electric.

Batteries and Equipment

48 Batteries, Dry.
49 Batteries, Storage.
50 Charging Apparatus.

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ELECTRICITY on the FARM
225 W. 34th St., New York

Without cost to me, please have manufacturers send complete information on the Electric Equipment represented by the following numbers:

Name .....

Address .....

.....

Nos. .....

Nos. .....Aug. 1927

For Information on Any Equipment Not Listed Above, Write on Margin

Electricity on the Farm

Vol. 1 AUGUST 1927 No. 2

CONTENTS

	Page
The Electric Refrigerator—a Farm Necessity	44
Taking the Aches out of Farm Housework	46
How to Make an Under-Heat Brooder	51
Here's an Oat Sprouter—You Can Build it in Your Spare Time, by M. C. Bridston	54
More Lamps for You at Little Cost	56
What Does the California Farmer Think of the Rural Electrification Program, by T. A. Wood	60
Fooling the Hens	67
A New Low Priced Water Plant	68
Eliminating the Labor in Sausage Making	69
Questions and Answers	70

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FRED SHEPPERD, *Editor*

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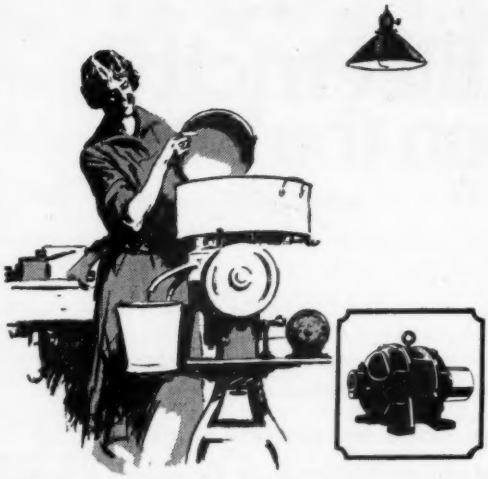


When Bob went in for himself,

I woke up on the electrical equipment proposition

I always thought that Bob would stay right here at home. It was a blow when he married and went in for himself. He said he'd never ask a woman to live in a place that wasn't wired for electricity — and drudge as his mother had. The new house on his place had all sorts of electrical helpers.

Well, that woke me up. And now that we have an electric wire out this way and electrical equipment, I know how he felt.

You ought to see how fast my wife gets through churning, separating the milk — doing a big washing — with Westinghouse motors, and labor-saving appliances to help her. And I've got a motor down at the barn that's as good as two farm hands when it comes to grinding feed, pumping water for the stock, sawing, or cleaning up the place.

Westinghouse motors and electrical equipment are backed by more than forty years of pioneer experience. Ask your electric power company to explain how economical they are of your time and energy, as well as of electrical current.

WESTINGHOUSE ELECTRIC & MFG. COMPANY
Offices in all Principal Cities — Representatives Everywhere

Westinghouse

Electricity on the Farm

Vol. 1 AUGUST 1927 No. 2

THESE torrid summer days bring forcibly to mind the real luxury of the electric refrigerator.

But can it be called a luxury?

Any device which prevents sickness is a necessity. And certainly the electric refrigerator does this.

On the farm where ice is cut from streams or ponds there is always a possibility of the water being polluted and dangerous bacteria present. This ice is stored in ice houses and in the summer taken out for use.

But the bacteria still remain alive and once they become active again upon the ice melting, they are as dangerous as they ever were. Many cases of typhoid fever can be traced to ice from polluted streams.

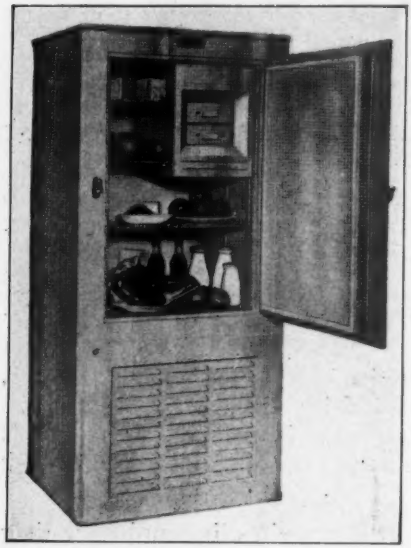
Then, too, the keeping of food in a wholesome condition by preventing fermentation and tainting, so often resulting from the lack of proper refrigeration, is a factor which cannot be discounted.

The electric refrigerator is a labor saver not only for the farmer but for the farm housewife as well.

No more ice cutting, no more storing of ice, and no more carrying it to the house.

For the housewife, the food problem is simplified, for the frequent preparation of dishes which might otherwise be kept from meal to meal is eliminated or reduced.

Electric refrigeration is a boon to the farmer, and lucky is the farm home that has the electric service which makes available "iceless refrigeration."



The Electric Refrigerator is, to the Average Farmer, a Luxury and a Necessity as well.

It Saves Labor, Does Its Share in Preventing Sickness, and is a Real Convenience to the Farm Housewife.

The Electric Refrigerator—A Farm Necessity

SINCE the electric refrigerator was first placed on the market for city use it has been considered far more advantageous than the old ice box. The chief arguments for it from the standpoint of the city dweller have been cleanliness, more effective refrigeration, and dependability.

No ice service in the city is so dependable but what several times during the year a customer has to do without ice.

But from the standpoint of the farm, the electric refrigerator is an absolute necessity. In the first place where ice is put up on the farm, there is always an element of danger due to the possibility of harmful bacteria being present in the water used for the ice.

Preventing Typhoid

Contrary to common belief, these bacteria are not killed by the freezing of the water. If they are present in the water before freezing, they will be present when the ice is subsequently thawed out.

For instance, if there are in the water used for making ice bacteria which cause typhoid fever (bacillus coli) these bacteria will remain in the water when in ice form. Later on when the ice is thawed out, such as when used in cooling drinks, the bacteria again becomes active and when taken into the human system they may cause typhoid fever.

For this reason alone home-made ice cannot be recommended.

Labor in Ice-Making

And of almost as great importance is the labor and investment needed in putting up ice at home. The large ice house, the saw dust, and the great amount of work entailed both in putting the ice up and later on in getting it out for use in the house total up to a surprising amount in dollars and cents if labor is taken at its proper value. On the other hand, consider the electric refrigerator. Once it is installed it operates continuously as needed, only stopping when the temperature of the refrigerator has been brought down to the proper level. It is entirely automatic in its operation. If there is a sudden demand for additional refrigeration, the machine starts up and continues to labor at its full load until such time as the load is lightened.

Best for Preserving Food

It is now generally recognized that the electric refrigerator indirectly saves money for the user. It makes possible the preserving of food, which would otherwise spoil, for much longer periods than can be done with an ordinary ice box. As an example, during hot weather, portions of the ice box may be comparatively warm. This has been the experience of every one who has used the ice box. Even butter becomes soft unless kept in close proximity of ice during hot weather.

But with the electric refrigerator the temperature is maintained uniform at all times and irrespective of the weather without.

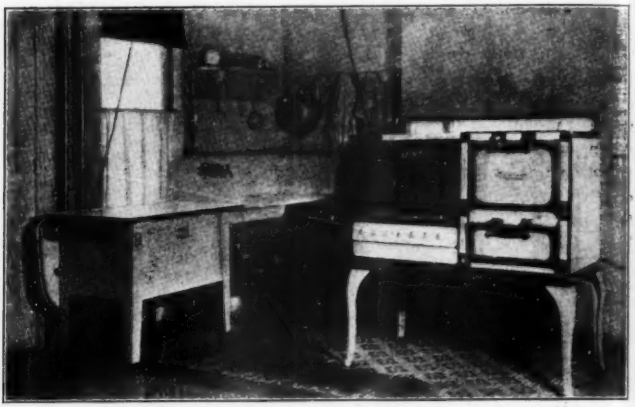
The lower temperature makes possible the keeping of perishable foods for much longer periods and also checks the tendency of foods toward spoiling.

Thus food stuffs which might otherwise have to be discarded due to tainting, may be kept longer and utilized with the resultant saving.

A Great Labor Saver

One of the strongest endorsements of the electric refrigerator is its ability to eliminate labor in connection with preserving eatables. The journey from the ice house, including the digging out and cleaning of ice, are entirely eliminated. It is only necessary to turn the switch controlling the refrigerator or plug it into a receptacle, and it operates until the plug is removed. Ordinarily the plug is never removed, for the machine,

(*Continued on page 59*)



An Electrified Farm Kitchen Has Every City Convenience, and Then Sometimes Additional Ones. Here's One Which Has, Besides the Electric Range and Other Usual Electrical Appliances, Faucets for Both Hard and Soft Water, the Supply Being Pumped by Electrically Driven Pumps.

Taking the Ache out of Farm Lo

THERE is an old saying that "If you want to know how rheumatism feels, ask someone who has it."

Recently a nationally known farm paper wanted to find out just what the farm women wanted in order to make their life more livable, and to reduce the arduous tasks around the farm household.

To the questionnaire there were 882 responses. It is not at all surprising that 689 of these women suggested electric service on the farm while 632 of them said that the farm home must have running water; 301 specified that the system must be complete with both hot and cold water; and 157 said that they wanted soft water as well as hard water under pressure.

No matter how these figures may be analyzed, it is evident that the farm women are thoroughly acquainted with the advantages of electricity on the farm as a means of reducing or eliminating the drudgery of farm housework.

Let us see, in the first place, just why housework around the

The Electric Iron Does Away with the Wood or Coal Fire on Hot Summer Days, and Serves with Equal Satisfaction Through the Rest of the Year as Well.

ut of ousework

farm is so much more strenuous than in the city home.

Well, for one thing, clothes get dirtier, due to the nature of the work of the farmer.

The house itself gets dustier on the farm because of the lack of pavements and sidewalks outside as well as the absence of the street sprinklers found in cities.

All cleaning around the farm is much more difficult, where electricity is not available and where power water systems are not installed, due to the very severe and continuous work of pumping water from wells and carrying it to the house.

Then add to this the work incidental to getting fuel into the house from out in the wood yard or coal bin and you have a man-sized job. Not only does the task of housekeeping fall on the average farm wife but she must also give a hand in truck gardening. Poultry and live stock, too, look to her for such attention as she must give them during the work hours of the day when all hands are in the field. Incidentally, the care of the poultry alone is no mean task. The surprising thing about it all is that the average farm woman can find time to devote to poultry in addition to her household tasks.

Here's the electric equipment farm women prefer, and the order of preference: Lights for home and yard; an electric flatiron; a washing machine; a domestic water supply pump; a vacuum cleaner; a few convenience appliances, such as a toaster, percolator, heater or fan; a sewing machine; an electric range; a refrigerator; a water heater; and an electric ironer or mangle.

Now let us see what the various appliances made available by the installation of electric service on a farm can do to lighten the load of the farm woman. First, the lights for the home and the yard may be considered. Small household chores, particularly early in the morning or late in the evening are made easier by the installation of electric lights, both in the yard, and around the milk house, chicken coops, and other buildings—these lights to be controlled by switches at convenient points. An errand to any of the out-buildings can be made so much easier and quicker where good light is provided, with all dangers of accidents eliminated. The value of electric lights around the home itself are well known.

The washing machine and electric flat iron ease up the work of the housewife tremendously. The washing machine does away with the heavy grind of Mondays while the electric iron saves time as well as a lot of steps in the course of doing Monday's wash.

The water supply system is probably the biggest help of all around the household. It does away with the many long and tiresome journeys to the pump as well as the heavy work of pumping the water—with a pump which is usually pretty hard running, and is a job for a man-sized man.

The vacuum cleaner saves time and effort by removing the rapid accumulation of soil from

Quite a Difference Between Turning a Faucet to Get the Water Supply and Having to Tote It from an Old Hand-Operated Pump

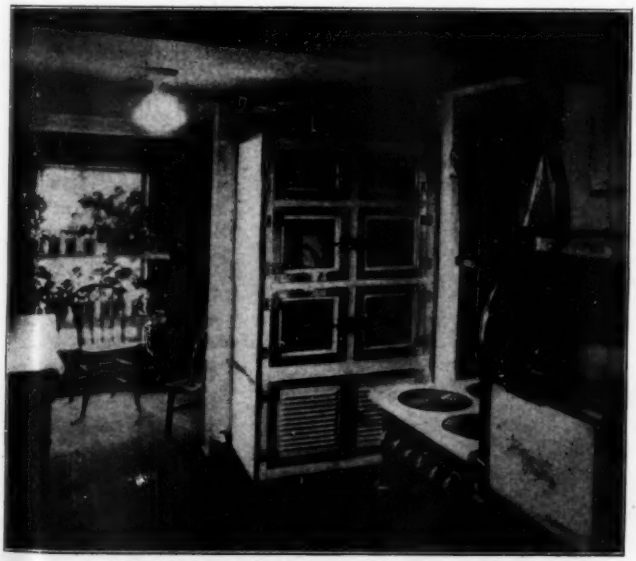
carpets. Instead of raising a large percentage of the dirt in the form of dust, to later settle on furniture, the vacuum cleaner absorbs it direct from the floor and saves the necessity of subsequent dusting.

Heating appliances of the smaller type such as toasters, percolators, hot-plates, are beneficial in that they simplify the work of getting light meals. In assisting they save many journeys to and from the stove or range.

The sewing machine, while not as big a labor saver as some of the other devices, nevertheless has its place as one of the implements which make farm life worth living for the farm housekeeper.

The electric range makes a big reduction in household work. It may give the wood pile a permanent rest and the coal bin at least a partial vacation. It works with such fine control that little attention is required and the frequent trips to the oven to see how the dinner is progressing are reduced to a minimum.

The water heater, a most essential unit, not only saves a great deal of time and labor but also provides convenience which is hard to measure in money. Hot water at all times certainly speeds up work around the home besides providing an incentive for greater use of bath tubs or



Fresh Beef and Other Meats Are Now a Common Article of Diet on Farms No Matter What the Distance from the City, for the Electric Refrigerator on the Electrified Farm Keeps Things from Spoiling.

shower baths with a very beneficial effect.

And then the refrigerator does its big share in simplifying the preparation of food through its ability to preserve food from meal to meal, from day to day, or even from week to week. No further use for the ice house—nor is there any necessity for toting ice once an electric refrigerator is installed.

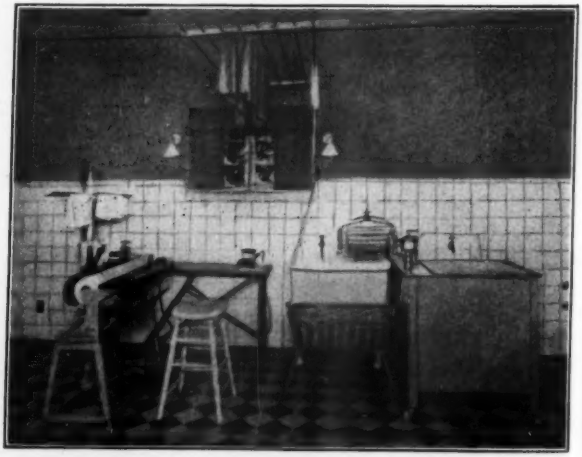
But we could go on forever naming the advantages of the various appliances operated by electricity in reducing the work of the farm house woman and making her life worth living. All in all, probably the biggest advantage of these labor saving appliances in the household is the creation of greater happiness and contentment—a condition absolutely necessary to the successful operation of the farm institution. A happy and contented household is one of the essentials for the raising of young folks in a way that they will be prepared to face the world in later years.

And not the least interesting and attractive feature of the use of electricity in the farm household is the very moderate cost of operating the various devices.

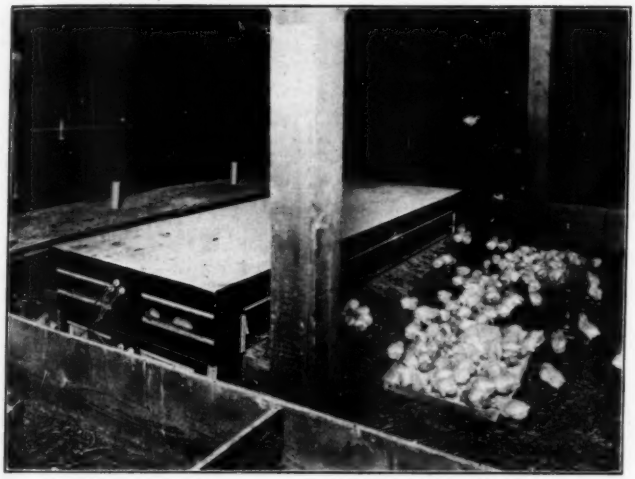
Music With Milk

LIBERTY, MO.—Arnold Schwarz, dairyman, has installed a radio set in his cow lot near here.

Schwarz tunes in and listens while milking his cows. He says he acquired the habit of milking to music in Switzerland years ago when members of his family used to gather around and yodel and play the accordion at milking time.—*Milwaukee Journal.*



Electricity Gives Blue Monday a Rosy Tint on the Electrified Farm. Plenty of Water, Both Hot and Cold, Electrically Driven Washer and Ironer, as Well as an Electric Iron, Make Drudgery Vanish.



This Electric Under-Heat Brooder Is Finding Great Favor Among Poultrymen in Western Washington. It Is Simply Constructed and Almost Anyone Can Build It.

How to Make an Electric Under-Heat Brooder

Here is a Design That is Simple and Which Has Proven Itself Most Efficient

AN investigation in the State of Washington disclosed that poultrymen did not take kindly to electric brooders, complaining that they were damp underneath the floor, giving the chicks cold feet, while too hot above. The overhead heating feature and insufficient ventilation were cited as the cause.

Immediately the electric engineers of the Puget Sound Power & Light Company, Seattle, working in cooperation with the state experiment station, set about to design an electric brooder that would meet all the requirements of the poultryman.

The result is an under-heat brooder that has found great

favor, and so simple is it in construction that many poultrymen find it practical to make their own.

It was designed on the principle that heat goes up, and consists of a box-like structure with three sets of electric coils underneath the metal floor. These coils are composed of so-called "resistance wire," and the designers advised the use of "Nichrome" wire for best results, which may be purchased as coil. The only problem is to determine the length to use to secure a desired wattage. These heating elements are composed of three steps of heat—150 watt, 250 watt and 400 watt elements, and to secure these wattages the length of the coils should be 125 feet, 68 feet and 46 feet respectively of No. 22 gauge B. & S. The two lower elements are controlled by an automatic breaker with double thermostat which can be set to maintain any heat required. The 250 watt element is mostly for reserve heat and is seldom used except in very cold weather.

Sand Makes it Fire-Safe

The metal floor is covered with 1½ inches of sand and about the same amount of sand is placed on the brooder house floor before the brooder is set in position, so there is sand above and below the electric heating coils. The sand absorbs the heat, which is thus held in reserve for several hours, and chicks will be perfectly comfortable if something should happen to shut off the current.

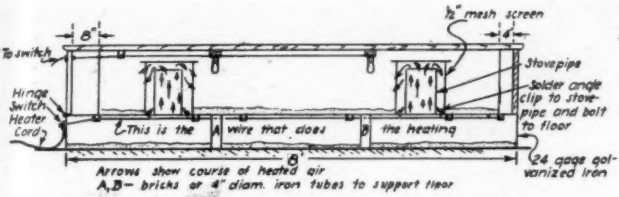
Heat or Resistance Wire Used in Brooders

LENGTH AND WEIGHT TABLE OF NO. 193 ALLOY RESISTANCE WIRE. 110 VOLTS

Size	150 Watts	200 Watts	250 Watts	300 Watts	350 Watts	400 Watts	450 Watts	500 Watts
	61 ft.	43 ft.	32 ft.	27 ft.	.....	.....	.....	.....
No. 24	.07 lbs.	.05 lbs.	.04 lbs.	.03 lbs	.....	.....	.....	.....
	96 ft.	71 ft.	55 ft.	44 ft.	36 ft.	32 ft.	.....	.....
No. 22	.18 lbs.	.13 lbs.	.10 lbs.	.08 lbs	.08 lbs.	.07 lbs.	.....	.....
	158 ft.	111 ft.	93 ft.	75 ft.	63 ft.	54 ft.	47 ft.	.....
No. 20	.47 lbs.	.35 lbs.	.28 lbs	23 lbs.	.20 lbs.	.17 lbs.	.15 lbs.	.....
	194 ft.	144 ft.	115 ft.	96 ft.	79 ft.	62 ft.	86 ft.	48 ft.
No. 19	.75 lbs.	.56 lbs	.45 lbs.	37 lbs.	32 lbs.	.28 lbs.	.25 lbs.	.22 lbs.
	.....	182 ft.	146 ft.	122 ft.	107 ft.	88 ft.	76 ft.	68 ft.
No. 18	.....	.85 lbs.	.68 lbs	.56 lbs.	49 lbs.	.42 lbs.	.38 lbs.	.34 lbs
	.....	.....	.....	198 ft.	173 ft.	149 ft.	129 ft.	114 ft
No. 16	.....	.....	.....	1.48 lbs.	1.30 lbs.	1.10 lbs.	1.00 lbs.	.89 lbs.
	.....	.....	.....	.....	.....	.....	211 ft.	188 ft.
No. 14	.....	.....	.....	.....	.....	.....	2.45 lbs.	2.18 lbs.

LENGTH AND WEIGHT TABLE OF "NICHROME" RESISTANCE WIRE. 110 VOLTS.

Size	150 Watts	200 Watts	250 Watts	300 Watts	350 Watts	400 Watts	450 Watts	500 Watts
	50 ft.	36 ft.	26 ft.	24 ft.	20 ft.	.....	.....	.....
No. 24	.06 lbs.	04 lbs.	03 lbs	02 lbs.	02 lbs.	.....	.....	.....
	78 ft.	57 ft.	42 ft.	38 ft.	32 ft.	27 ft.	24 ft.	.....
No. 22	14 lbs.	10 lbs	07 lbs	07 lbs.	06 lbs.	05 lbs.	.04 lbs.	.....
	125 ft.	93 ft.	68 ft	62 ft.	53 ft.	46 ft.	41 ft.	35 ft.
No. 20	35 lbs	26 lbs.	19 lbs.	18 lbs.	15 lbs.	.13 lbs.	12 lbs.	10 lbs.
	158 ft.	118 ft.	86 ft.	77 ft.	66 ft.	58 ft.	52 ft.	51 ft.
No. 19	.57 lbs.	.42 lbs.	.31 lbs.	.28 lbs.	24 lbs.	.21 lbs.	.19 lbs.	.18 lbs.
	195 ft.	146 ft.	106 ft.	97 ft.	83 ft.	72 ft.	64 ft.	57 ft.
No. 18	86 lbs.	.65 lbs	.47 lbs	43 lbs.	37 lbs.	32 lbs.	.28 lbs.	.25 lbs.
	.....	.....	172 ft.	158 ft.	136 ft.	119 ft.	106 ft.	92 ft.
No. 16	.....	.....	1.24 lbs.	1.14 lbs.	.98 lbs.	86 lbs.	.76 lbs.	.66 lbs.
	.....	.....	.....	.....	.....	187 ft.	167 ft.	150 ft.
No. 14	.....	.....	.....	.....	.....	2.11 lbs.	1.89 lbs.	1.70 lbs.



Details of Construction of Under-Heat Brooder

Ventilating air enters adjustable vents at each end of the lower portion, passing through the heating compartment and up through screen protected drums in the center of the floor. This warm air is then reflected from the roof of the brooder, down over the backs of the chicks and goes out through the lower portion of the oil cloth curtains, the brooder being heated mostly by this warm ventilating air.

Dim Lights Provided

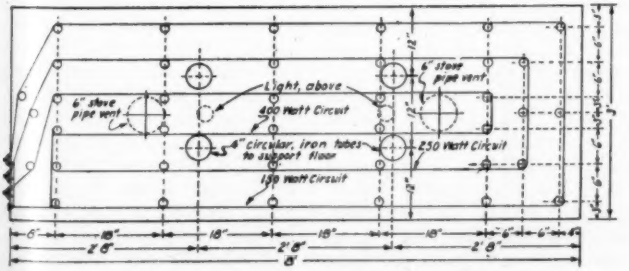
Dim lights can be provided, which the chicks like. These in combination with the two windows at each end of the brooder, make it possible to inspect the chicks under the hover and see just how they are brooding without disturbing them. These lights also facilitate the reading of the thermometer within. The adjustable windows should be removable to provide additional ventilation during warm weather.

The brooder compartment is hinged to the heating compartment below, making it easy to open and clean. Counter weights with a pulley can be attached to the front side to help lift the top. With a fine rake, the droppings, which are dry, can be removed, a little new sand being replaced each time.

Combination feeding yards and runways may be used on both sides of the brooder; the first few days the sides should be up, and then removed and the floor lowered for a runway.

The brooder shown in the ac-

(*Continued on page* 59)



Wiring Plan of Under-Heat Brooder

Home-made Electric Oat Sprouter Used by George R. Shoup, of Puyallup, Wash. It Is Also Used to Sour Milk for the Flock.

Here's an Oat Sprouter
You Can Build in Spare Time

By M. E. BRIDSTON

THE poultryman has long used the electric light in the poultry house to increase egg production during the winter months, and there is no good reason why electric current cannot be used in other ways to simplify the work of the poultry farm. George R. Shoup of Puyallup, Wash., has contributed his bit toward this end by designing an electric oat sprouter, which at the same time can be used to sour milk for the chickens.

The outfit that Shoup uses, and which is described in this article, is large enough to meet the needs of 1,000 birds, but may be made larger or smaller to fit the needs of the individual poultry farm. It consists of a box-like structure 10½ feet long, 5½ feet high and 24 inches deep, with the front side covered with an oil-cloth certain to retain the heat. An electric stove is placed in the center near the bottom, and on each side of it are a series of shelf-like compartments

The principal idea of this oat sprouter is to provide a continuous chain of sproutings to make a supply available at all times. Each morning the poultryman places a supply of oats in the top row of bins, and adds water, after dropping the contents of each row to the row below. Electric heat does the rest.

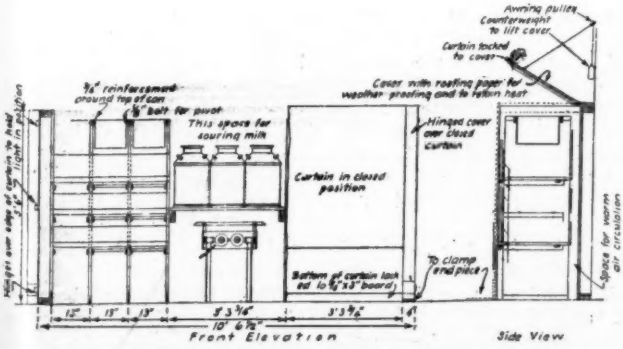
for the oats. Directly above the heater is a shelf to accommodate the milk cans.

How the Sprouter is Built

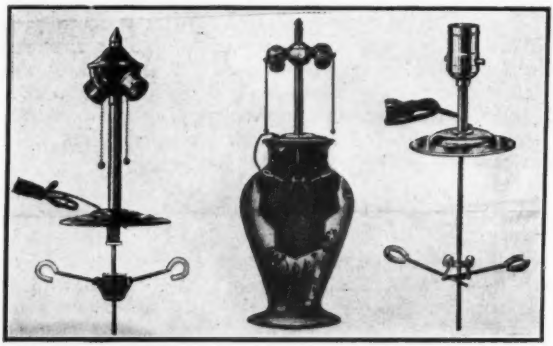
Each of the upright sections of the oat compartment is divided into three bins, each large enough to contain a bucket of sprouted oats, the actual dimensions and the construction details being shown in the accompanying sketches. Between each oat bin is a sliding panel or board.

The principal idea of this oat sprouter is to provide a continuous chain of sproutings to make a supply available at all times. Here is how it works out. Each morning the poultryman places a supply of oats in the top row of bins, and adds sufficient water. But first he must empty the bins, moving the oats in each bin directly to the bin below it. The bottom bins contain the buckets to hold the fully sprouted oats. The operator pulls the sliding panels directly above the buckets, permitting the sprouted oats to fall into the pails. When this tier of bins has been emptied, he pulls out the sliding partition directly

(*Continued on page* 58)


Awning pulley
Counterweight to lift cover
Curtain tacked to cover
Cover with roofing paper for weather proofing and to retain heat
Hinged cover over closed curtain
Curtain in closed position
To clamp end piece
Space for warm air circulation
Front Elevation
Side View

Sketch Showing Details of Oat Sprouter



How An Ordinary Vase Is Changed, With Little Cost, Into An Electric Lamp.

More Lamps for You and At Little Cost

Here's a Way to Change Your Old Oil Lamps to Electric Ones; Costs Little

ONE of the most noticable differences between the average city home and the electrified farm home is the greater number and variety of electric lamps in the city dwelling. Here is a way the farm household can make use of the old oil lamps to add to the comfort and convenience of the parlor and other rooms.

Wherever electric service is extended to a farm home, there will be on hand a number of old oil lamps.

Formerly it was the practice to discard these or to lay them around the house for possible emergency use.

But discarding them is no longer necessary.

With the development of a very complete line of conversion appliances and fixtures, it is now possible to take any oil lamp and make an electric lamp out of it. Where the oil lamps are in good state of repair, very attractive and satisfactory electric lamps are the result.

The illustrations herewith show some of the converting units employed and the results of their use.

Above Are Shown Three Oil Lamps Before and After Changing to Electricity. In Each Case the Oil Lamp in Its Initial State Is Shown at the Left, and Converted, at the Right. In Between Are the Units Used in Making the Changes. Note That the Lamp When Electrified Presents a Better Appearance Than It Does When in Its Initial Form.

In each case the converting is a very simple matter, the fittings being so arranged as to properly connect up with standard oil lamp connections. Probably the only difference in the finished electrified lamp and the lamp in its original state is the absence of the chimney which ordinarily projected through the shade. This, however, is a change which really improves the appearance of the lamp as will be noted by observing the illustrations herewith.

Even the cheaper lamps can be changed over.

Vases May be Converted

Vases are also adaptable for use as electric lamps through the employment of appliances now on the market for converting vases to electric lamps.

One of the illustrations herewith shows a simple set of devices and how they are applied.

Toggle arrangements make it possible to lock the lamp stand, which supports the shade and the bulb firmly in position, making a very sturdy unit throughout.

There are at present a big variety of vase converting units on the market, some designed for a single bulb and others for several bulbs. Most electrical supply houses carry these converting units in stock.

Oat Sprouter

(*Continued from page* 55)

above, and repeats the operation until the top row of bins is empty to receive a fresh supply of oats. There being three bins in each section, the oats remain in the sprouter for three days, a sufficient length of time to sprout them. However, the oats may be left in the buckets one day, which would give a four-day sprouting period.

Warm Air Circulation

Space is provided back of the bins for warm air circulation. On each side of the structure is placed a narrow board, hinged to the side wall. When the curtain is pulled down over the front side, these boards are lapped over the edges of the curtain and fastened to shut out the outside air.

The electric heater is simple, being merely a galvanized iron box containing a 100-watt coil and a 150-watt coil. Insulators are fastened to the metal floor with stove bolts; the heating coils are attached and snap switches mounted on conduit outlet boxes control the current.

The top of the sprouting box is hinged to the back wall, and a counter weight and pully may be used to help lift it and keep it open while the operator is putting in fresh oats.

This sprouter needs little or no attention, which is one of its best features.

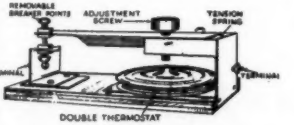
The top row of bins should be provided with metal containers to hold the oats during the preliminary soaking in water. The temperature should be kept from 60 to 70 degrees.

The electrical watt was named in honor of James Watt, one of the early electrical scientists.

Electric Brooder

(*Continued from page* 53)

companying working drawings is 38 by 96 inches and has a rated capacity of 500 chicks. The heating compartment should be made of 24 gage galvanized iron; the brooder compartment of ¾ inch No. 3 tongue and groove flooring with 1½ by 1½ framing. Use 18/16 "Nailit" porcelain insulators, fastened to the underside of the floor with flat-head stove bolts. Solder the heads of the stove bolts to the



This Drawing Shows the Construction of a Thermostat With Breaker, Suitable for Use in Electric Brooder. Similar Equipment Can Be Purchased, But One Handy With Tools Can Make It. The Thermostatic Spring Expands as the Heat Increases and at a Designated Point (About 95 Degrees) Pushes Up the Adjustment Screw, Separates the Breaker Points and Cuts Off the Current. A Tension Spring Pulls the Breaker Bar Down Again as Soon as the Heat Decreases.

brooder floor. For dimming lights use 5 to 10 watt red or green lights. If not dim enough apply one coat of paint.

This brooder was given a season's test by the Western Washington Experiment Station at Puyallup, Wash., who has recommended it highly.

Electric Refrigerator

(*Continued from page* 45)

being automatic, starts and stops as refrigeration is required and does not operate continuously.

One of the most troublesome points about farm housekeeping is the preserving of fresh meats. On the majority of farms, where electric refrigerators are not available, fresh meats are rarely used during hot weather. Only are they available when some one goes to the town meat market and brings home a supply for immediate use.

Keeping Meats Fresh

The idea of keeping uncooked meats for any length of time in the old type of ice box is never thought of.

But with electric refrigeration, the farmer can keep meat just as long as can the city meat shop.

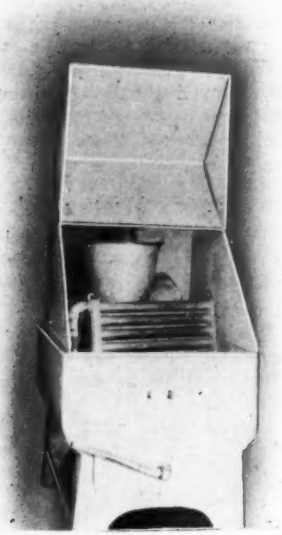
More fresh meat, with the benefits which such represents, is made available by electrically operated refrigerators.

During this hot season of the year the benefits of the electric refrigerator can best be appreciated. But only by visiting a farm where such a refrigerator is in use can we fully appreciate the tremendous advantages which it represents over the old fashioned ice box.

Now that farm labor is so high priced, and every bit of time spent on incidental chores takes from really productive efforts, the electric refrigerator may be said to be a fine business investment for average farm.

Current Consumption

Finally, the average size electric refrigerator consumes not more than 50 kilowatt hours per month, which represents a very small cost considering its benefits.



An electric dairy equipment sterilizer. This machine is being very successfully used west of the Rockies, the cost per equipment sterilization being equal to or less than that for oil-heated units and is much more sanitary and convenient.

What Does the Rural

IN traveling thru the great interior valleys of California two general types of farms are found, namely the Dry and the Irrigated farm. The farming methods practiced on any one of these places does not depend so much upon the location of the land or the fertility of the soil as it does upon the investment in that particular piece per acre. The dry farm is expected to yield one crop a year with an occasional rest period sandwiched in between, while the

"The farmer wants electric service because it increases his land value and makes it more salable, because it does his work better and in most cases cheaper than can be done in any other way, that it reduces his fire risk and insurance, that it can be made fully automatic and that it is silent, powerful and sanitary."

Electric Brooding Has Become Very Popular in California, Various Types Being Offered For Sale. These Brooders Can All Be Classed Into Two General Types, Namely the "Convection" or Non-Glowing Brooders, and the "Radiant" or Glowing Type Shown Above.

he California Farmer Think lectrification Program

*By T. A. Wood**

irrigated farm must yield two, three, five and sometimes even seven crops annually with fertilization of the heavily worked soil accomplished by means of crop rotation or commercial

Mr. T. A. Wood, the author of this article, was born and raised a farmer, his father still being in the business and operating a large vineyard and alfalfa ranch near Madera, Calif. Mr. Wood was educated in the public schools of Madera County and graduated as Electrical Engineer from the University of California in 1920. Since graduation he has spent one year as designer for a large oil concern, two years in the operation department of a large electric service corporation, three years along similar lines in South America, and two years as Field Engineer with the California Committee on the Relation of Electricity to Agriculture. He owns and operates three ranches of his own in Madera County and has an interest in a fourth, so that he is particularly well fitted to speak with authority on the subject of farm electrification.

Like most good farmers, Mr. Wood is married, and he has two sons to follow in his footsteps.

fertilizer applications. And yet even though the crops produced on one is much greater than that of the other the two types of farms are often found side by side with identical soil and natural conditions. Why this contrast?

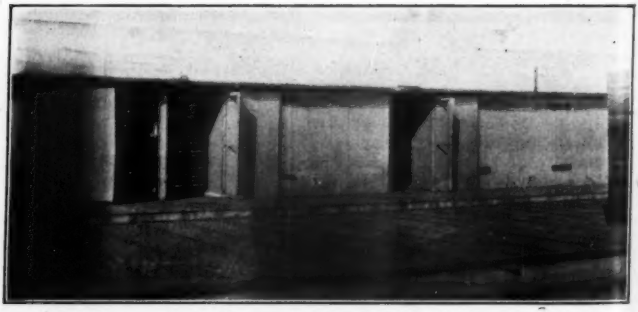
Dry Farming

Dry farming has existed in California since the days of the Spanish Barons and up to a few year ago was the common practice. Land values have changed of late however and gradually this old and picturesque method is being superseded, but not without a dying struggle. The dry farmer, as a rule, rents the land from large estates or has inherited it. In any event, the land does not represent a very large investment per acre to him, probably rarely exceeding $50.00. If he rents the land it is customary for him to furnish seed, feed, machinery, power and labor and take as his share three-quarters of the harvested crop. The owner claims the other quarter as rent, which must cover interest on the investment, taxes, insurance and repairs on the farm buildings, etc. Obviously, a large annual return per acre is not required. Dry farms consist of from 6400 to 2000 acres, a part of which lies fallow each year.

The field work on these large farms is done by tractor or mule power while the water is pumped by a gas engine or windmill. Rarely do these farms have electric power, nor is their need for it very great, since it cannot be used for plowing or cultivating on a large scale.

Irrigation Farming

Irrigation farming, on the other hand, is usually confined to smaller tracts, the popular size ranging from 20 to 40

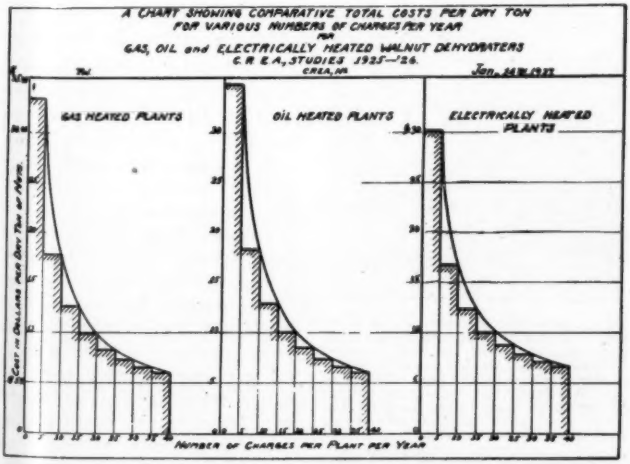


An Electric Walnut Dehydrater

This plant is completely electrified, using electric circulating fans and electric heat. It represents a connected load of 85 kilowatts and can dry 7 tons of walnuts daily. By means of a double throw switch either the dehydrater load or the pumping load can be switched on as desired but not both at once. Since the walnut season comes after the irrigation load has dropped off the two do not interfere with each other.

acres. The bare land ranges in value from $50.00 to $150.00 and to this must be added the cost of obtaining water, leveling the land, ditching and planting. Often no major crop can be harvested for several years, while interest, labor, taxes and other charges increase rapidly. To meet these expenses the land is forced to produce, and then produce again and again annually. Modern and efficient machinery must be employed to speed up the work and make labor conditions more agreeable. The farmer, to survive, must be alert, watch closely the market conditions and plan for the future. But what does this have to do with rural electrification?

These two types of farmers, having different power requirements, are very apt to have conflicting ideas concerning the real purpose of rural electrification. The dry farmer, who must plow or haul his produce in large open fields, must have a power source whose scope of operation is almost unlimited. This the electric plow or the electric tractor has not been able to do as yet successfully. He therefore has little need for or sympathy with the rural electrification movement. The use of electric power is very apt to be regarded by him as an added unnecessary investment which yields practically no return, a something that is akin to luxury, and while he would like to have electric lights in his house and barn still the old coaloil lamp


A CHART SHOWING COMPARATIVE TOTAL COSTS PER DRY TON
FOR VARIOUS NUMBERS OF CHARGES PER YEAR
FOR
GAS, OIL and ELECTRICALLY HEATED WALNUT DEHYDRATERS
C. R. E. A., STUDIES 1925—'26.
GAS HEATED PLANTS
OIL HEATED PLANTS
ELECTRICALLY HEATED PLANTS
NUMBER OF CHARGES PER PLANT PER YEAR

Electric walnut dehydration has been considered an expensive practice in the past. When a parallel load exists, however, such as a summer irrigation load and the dehydrater is served by means of a double throw switch, which reduces the demand charge, this cost may equal or be less than that for fuel heated plants, as is shown by the above chart.

will do. If the electric line passes the house the chances are he will install electric lights but that is all. Electricity has not been successfully adapted to his machines which are the gang plow, the seeder and the combined harvester or other dry farming or ranching implements.

The Problem of "Lights Only"

Since these large farms are often miles apart the line investment which would be necessary to supply lights only is quite large and interest on the investment cannot be earned. For this reason the dry farmer has been left out of the picture.

Where a goodly portion of the California electric power is generated, on the steep slopes of the high Sierras. These two penstocks conduct water under pressure to the power house at the base of the mountain where 50,000 horse power is generated. The total head is 1375 feet, the water pressure at the power house 580 pounds per square inch and the penstocks are 6027 feet long varying from 8 feet in diameter at the forebay to 3 feet at the power house. This water is caused to pass thru four hydro electric plants and develops 85120 h.p., before it is discharged into the irrigation canals.

This being the case, the dry farmer is generally uninterested in rural electrification, he may be even skeptical and remark that a 6 per cent return is not guaranteed him. He may think he sees in this movement an increased financial or tax burden, a higher investment per acre with no increased return. He may even have suspicion that someone is trying to use him or that certain men are trying to manufacture themselves a job. Even though he cannot as a rule use the power he feels that somehow he has been slighted.

Where Value Is Greatest

The irrigation farmer, however, who has learned the value of the electric motor, chiefly through its work at the pump, and who must have efficient and modern machinery on every hand to speed up his work, usually looks upon this movement in a different light. He senses the possibility of this energy source making duplication in his machinery unnecessary. Today he must plow his fields with an oil or gasolene tractor, pump his water with an electric motor, turn his saw with a gas engine, take his produce to town in an auto truck, have a horse for odd chores about the farm, keep an auto for quick errands and pleasure and so on with one

duplication of machinery after another. Each machine suffers depreciation and has repair charges, each requires a different skill in its successful operation and maintenance. He longs for a day when one energy source will do all his chores and electricity today seems to hold out to him the greatest future possibilities. His mind would then be relieved of all the little idiosyncrasies of each machine, he would be free to improve his mind, plan his farm and lift up his eyes and look around.

Gradual Development

This type of farmer does not expect the sudden, all-at-once arrival of a great electric power millennium that will solve all his power problems. He knows, however, that little electric millenniums are happening daily and that these are making conditions better on the farm. He thinks that he can see the day not far distant in California, when the electric tractor will automatically plow his field, the electric hay dehydrater cure his hay in a few hours, and the electric auto or aeroplane speed him silently and fumelessly wherever he may wish to go. He is in a receptive mood, he is willing to cooperate if possible, because he sees a direct return.

Justifiable Reserve

Experience has taught him however to be reserved, to question new movements and to be more or less inwardly suspicious. He has many reasons for the possession of these characteristics.

In the infancy of most industries unwise happenings occur. The electrical industry has a few skeletons in its closet, and while wise and impartial administration is gradually building public confidence, one unwise action might destroy it. The California Farmer is on the lookout, he wants no cards up the other fellows sleeves, he wants them instead face up upon the table.

After the hydroelectric power is transmitted from the Sierras to the farm over great steel towers it must be stepped down in voltage before it can be used. For economic reasons this transformation should take place near the farm load center. The necessity for irrigation during the long summer months and the comparatively abundant supply of hydroelectric power has enabled California to lead the world in power consumption per acre. This pumping load has been the parent of all other farm uses and has made possible the use of the electric range, the electric walnut dehydrater, the electric dairy equipment sterilizer, the electric silo filler and numerous others.

Benefits Expected

Farming is our one basic industry, without it we would become a nation of beggars at the back door of the world. When the farmer declares a dividend, dividends are declared throughout the land. With this knowledge within his brain the farmer naturally feels that rural electrification should, first of all, benefit him. He believes that it should result primarily in an increased yield per acre at equal or reduced costs, that it should decrease drudgery for his wife, himself and the hired man, and that it should result in more beautiful and convenient rural homes and a more prosperous and contented rural community. And then as he gathers his harvest he expects the secondary harvests to begin.

Spraying the stationary way. The operator carries his hose to the field, couples it to the service hydrant, and sprays all trees within reach of his 100 foot hose. He then moves to the next hydrant and continues. One man by this method can do the work of two and can spray the trees when they should be sprayed regardless of soil or weather conditions.

If this rural electrification movement is to succeed, so far as the farmer is concerned, those in charge of the movement's destiny must move with care and aforethought. The farmer has learned that miracles do not happen, that everything instead has its cause and effect and he expects the electrical men to tell the truth. He wants, as an illustration, no exaggerated statement concerning the health giving powers of the violet ray machine, or the enormous increase in egg production caused by the use of winter lights. He expects, rather, to find over a course of years that his hens are healthier than his neighbors due to this treatment or that the hen's egg cycle was so changed by the use of winter light and longer hours of feed that she started to lay in winter rather than in the spring, and eggs being higher at that time of the year profits were increased. The farmer thinks, and not without data to prove it in some cases, that winter light and feed actually shorten the hens productive life, but due to better egg prices in winter, even though her life is shortened, she yields a greater net return.

In summing up then the thoughts of the farmer on this important movement, which cannot help but benefit millions of people, one is led to the conclusion that he wants electric

service because it increases his land values and makes it more salable, because it does his work better and in most cases cheaper than can be done in any other way, that it reduces his fire risk and insurance, that it can be made fully automatic and that it is silent, powerful and sanitary. The farmer wants anything having these attributes that will increase his income or add to his convenience and comfort. In fact he is entirely human. But he knows that he isn't getting something for nothing and he is willing to pay what to him the services are worth. He expects rural electrification to continue, perhaps with less noise, until electricity becomes indeed the universal farm power.

A stationary electric orchard spray plant. The orchard is piped, usually under ground, with main and laterals and the main is connected thru gate valves to a spray pump which is driven by an electric motor. This type of spraying equipment has many advantages over the older portable sprayer.

Fooling the Hens

The electricians have gotten the hens absolutely buffaloed with the electric lights. By lighting the laying house certain hours of the early morning they persuade the hens to believe there are two days in 24 hours, so biddy gets busy and delivers an increased number of eggs.

An experiment near Richmond resulted as follows: Two equal flocks produced during February and March, no lights, 4,956 eggs, and with lights, 6,155. Market value of the 1,119 eggs extra $39.80. Cost of electric current used 96 cents. Net profit, $38.84.

The Pennsylvania report on Waukesha County, Wisconsin, says: "The lighting of chicken houses to induce a greater production of eggs in the winter is becoming quite general. An average increase of eggs in winter of 20 per cent is obtained and in some cases as high as 41 per cent."

In other words, man is forcing longer working hours on even his chickens, as well as himself, by use of artificial light.—*South Hill (Va.) Enterprise.*

The first electric cooking was done at the Crystal Palace in London in 1899 as a remarkable experiment. Today millions of meals are prepared electrically every day in this country alone.

A New Low Priced Water Plant

A new home water system has just been announced by Fairbanks, Morse & Co., manufacturers, Chicago, Illinois, which is a distinct departure in design and appearance from any other home water system in the field.

The usual conventional design consisting of a pump with a tank placed alongside on an extended base, has not been followed in the appearance of this latest Fairbanks-Morse Product. With the cover in place none of the pumping mechanism is visible, all being completely enclosed and protected.

System Has Many Features

This new system has, according to the company's announcement literature, four distinct features.

First, it is very simple, having free water passages; a unique valve arrangement with 4 valves in one deck; a high grade V-belt with no idler; and fresh water may be had without any external check valve being necessary.

Second, the plant has complete enclosure. The entire mechanism is enclosed; there being no exposed moving part.

Third, the plant is quite accessible. To get at the pump, motor or switch, the hood is lifted. To get at the valves, remove one stud bolt and the water bonnet can be lifted off.

While this water system is new in the sense that it is different in appearance, the company reports that it is *not* new in the sense that it contains any untried principles of pumping water.

Has Big Capacity

The new water system has

The New Fairbanks-Morse Water System

large capacity—210 gallons per hour—and it is recommended for farms' use. It is ideal for soft water service and the general requirements of a family of 5 to 7 persons. The plant sells for less than a hundred dollars.

Sterilization Improves Dairy Products

One of the greatest sources of sour milk and low-grade dairy products is the unsterilized utensil. The electric sterilizer will remedy this condition.

Taking the Labor Out of Sausage Making

Putting up sausage at killing time always has been considered a "grind," largely because of the tedious work of turning the grinder by hand.

On the electrified farm, however, sausage making is no longer a disagreeable task for the utility motor and a pulley on the grinder put the electric current to work and the job is done in less time than by hand. The small motor uses very little current.

A Correction

In the July issue of this magazine, on page 21, there appeared an illustration of a Dazey Electrically Operated Churn. Underneath is the caption "The Babcock Tester—One of the Many Electrical Farm Appliances."

A last minute transfer of cuts resulted in the above error. While most of our readers recognized such, being familiar with the well known Dazey Churn, this correction is inserted to avoid misunderstanding by any not familiar with that device.

Despite the Suspicious Array of Bottles, Pans and Press This Is Not an Amateur Winery. It Is a Home-made Sausage Factory, and the Son of the Home Rigged Up the Utility Motor to Save His Own Elbow Grease.

QUESTIONS AND ANSWERS

Using Rheostat on Fan

To the Editor:

I have come across some problems in connection with farm electrification from time to time, so when I read your offer I thought I would like to have any information you had on the following:

I have a fan, a real good one, but it has only one speed. I have wondered if I could condense the current with some simple device so that it wouldn't cost me very much money.

Anything you can send me on this will certainly be appreciated.

M. L. L.

Answer. You do not state the size of fan you have so it will be assumed that you have a 12 inch one, a size commonly employed.

This type of fan will take in the neighborhood of 35 watts to operate at high speed. At this rate you could operate it for approximately 30 hours for one kilowatt hour of current. Assume that your current rate is 10 cents per kilowatt hour, then it would be costing you but one-third of a cent per hour, or three hours for one cent, approximately, to operate. This is a very small item, indeed, and considering that the average fan is rarely run more than 8 hours per day you would probably be paying not more than 2 or 3 cents a day for the use of it.

As to employing a device such as a resistance unit, for cutting down the flow of current, the instant you do this you also cut down the speed of the fan, and the efficiency of the fan is very much reduced due to the fact that a considerable amount of the current is lost in creating heat in the resistance.

The employment of rheostats in connection with fans where they are not an integral part of the fan is poor practice. Fans are made to operate at their best speed and efficiency as furnished by the factory and when you start altering this speed you reduce the efficiency and get far less for your money than if you operated the fan at high speed.

Then, too, there is the additional danger of fire where resistances of improper designs are used in connection with fans.

All in all, it is far more economical to use a fan without resistance (unless such resistance is built right into the fan) and in view of the low cost of operating fans you would be saving little and sacrificing much in the way of the breeze which the fan can give you when run as intended.

Here You Are!

—a free service you'll find mighty helpful

When you run across some problem in connection with your electrical installation or equipment —

When you are in need of data regarding safe and satisfactory wiring —

When you want to know where to secure some particular piece of electrical equipment, or farm equipment operated by electricity —

Or, in fact, whenever you have a question you would like to ask relating to electricity or electrical equipment —

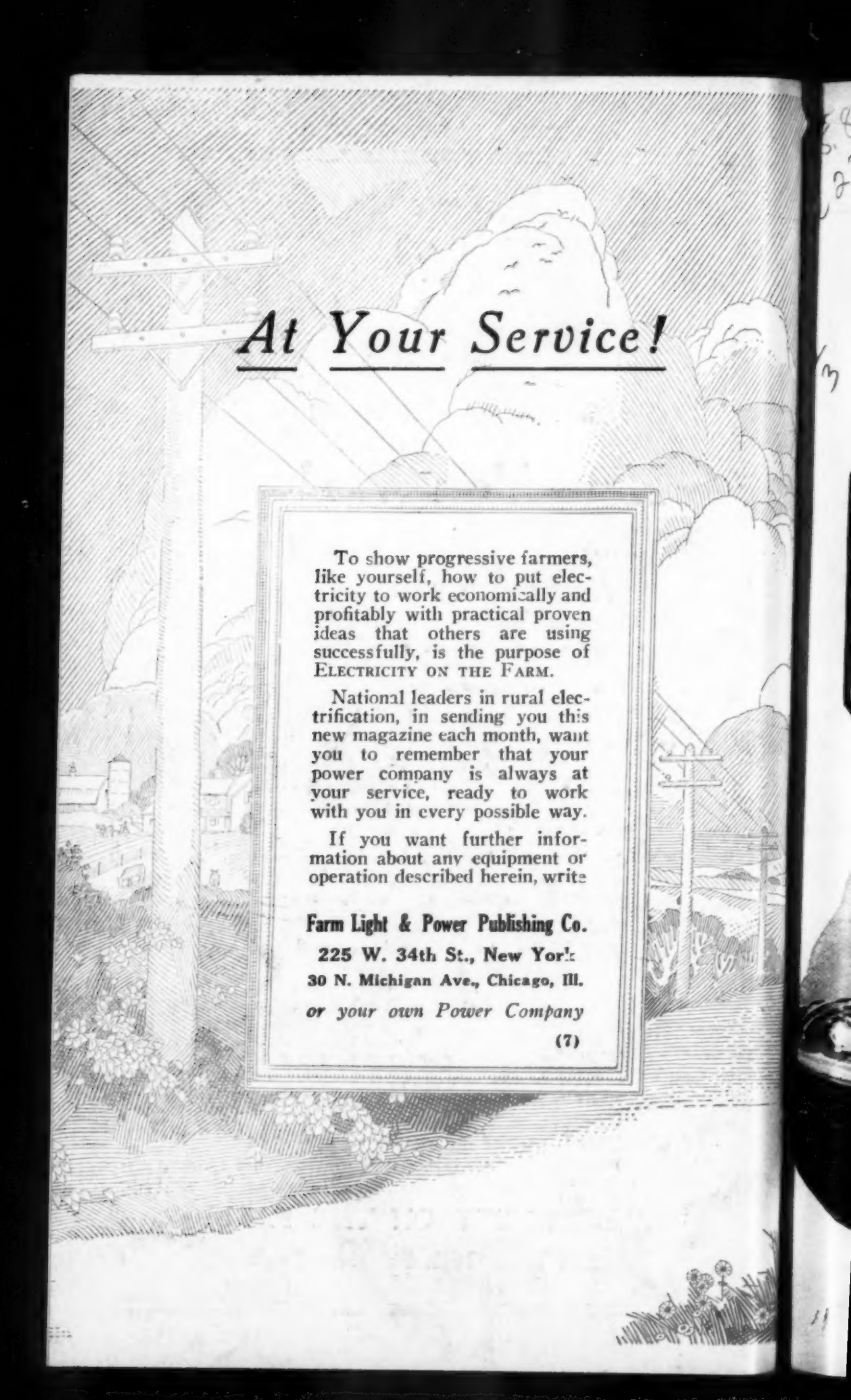
Write to "Questions and Answers" Editor, "Electricity on the Farm," 225 West 34th Street, New York City.

We'll be glad to answer such questions, insofar as our facilities permit, and without charge whatsoever.

This is part of the service we render our readers, and we invite you to make use of it.

ELECTRICITY ON THE FARM

225 West 34th St., New York


At Your Service!
To show progressive farmers, like yourself, how to put electricity to work economically and profitably with practical proven ideas that others are using successfully, is the purpose of ELECTRICITY ON THE FARM.
National leaders in rural electrification, in sending you this new magazine each month, want you to remember that your power company is always at your service, ready to work with you in every possible way.
If you want further information about any equipment or operation described herein, write
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